

A Tale of Two Market Segments – Sovereign vs Non-Sovereign Green Bond Issuances in India

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India has embraced green bonds at the sovereign, corporate, and local government levels. Unlike other bond instruments introduced over the past three decades in the Indian debt market, private corporates were the early movers, with the first issuance in 2015, followed by the first green municipal bond issuance in 2021 and the first Sovereign Green Bond (SGrB) issued by the Government of India in 2023. However, the success of these instruments has been mixed across issuers, making it an interesting subject for detailed study. Despite accounting for the largest outstanding green bond segment, SGrBs have experienced relatively subdued secondary market activity. In contrast, green municipal bonds have gained investor interest and emerged as a promising source of urban climate finance. This paper examines in detail the evolution and performance of India's green bond market across sovereign, corporate, and municipal segments, analyzing subscription patterns, pricing behavior and secondary market performance. It proposes differentiated policy incentives, including tax benefits, ESG-linked regulatory recognition, and green credit mechanisms, to enhance the attractiveness of green bonds.

Keywords: Sovereign Green Bonds, Municipal Bonds, Climate Finance, Market Structure

JEL Classification: G12, G18 and R51

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1. Introduction

Recent years have seen the rapid progression of green finance that addresses the growing global Environmental, Social & Governance (ESG) funding requirements across the world. Globally, green bonds are the most common instruments issued under the ESG umbrella and since their first ever issue - in July 2007 by the European Investment Bank, and have been issued by supranational entities, corporates, sovereigns, municipalities and financial institutions across the globe. The capital raised through these bonds are earmarked only for specified eligible projects with environmental benefits as per the ICMA Green Bond Principles which are typically characterised by high upfront capital requirements and long gestation periods. This green tag has enabled issuers to benefit from a pricing advantage or “greenium” in several international markets due to strong demand from investors with ESG mandates. India has also embraced this instrument at the sovereign, corporate and local government levels.

Green bonds are an emerging section of the Indian debt or fixed income market which is dominated by the sovereign bond segment. Long-term bonds issued by the Central Government of India known as Dated Government Securities or G-Secs are the most liquid instruments in this segment. Other sovereign bonds include short-term Treasury Bills (maturing within a year of issue) issued by the Central Government and the State Government Securities or SGS (earlier known as State Development Loans i.e., SDLs) issued by the State Governments and Union Territories. The corporate debt segment comprises of tradeable debt issued by all others including Private Corporates and Local Governments or Municipalities. The sovereign bond segment is the most liquid part of the Indian debt market.

Private Corporates were the earliest movers in the green bond segment in India, with the first issuance in 2015, followed by the first Green Municipal Bond (GMB) issuance in 2021 and the first Sovereign Green Bond (SGrB) issued by the Government of India in 2023. However, the success of these instruments has been mixed, making it an interesting subject for detailed study.

Although constrained by limited historical data due to their recent introduction, this paper provides a foundation for research on India's green bond market. We highlight a contrasting trajectory: SGrBs which account for the largest share in the category in terms of outstanding size, have faced pricing frictions in primary auctions and thin secondary market activity despite being part of the liquid G-Sec market, while non-sovereign green bonds and GMBs in particular, have fared comparatively better despite being privately placed (or sold) within an inherently illiquid segment of the Indian debt market. Finally, we discuss a differentiated incentive framework that may help make green bonds more attractive among market participants.



The rest of the paper is structured as follows. Section 2 presents a literature review of studies on green bonds in emerging market economies (EMEs), focusing on the concept of “greenium” and the overall development of the global green bond market. Section 3 examines the trajectory of the green bond market in India with issuer specific analysis and measures implemented by respective regulators, while Section 4 concludes with policy measures aimed at popularising green bonds among Indian investors.

2. Literature Review

The development of green bond markets has gained significant traction over the past decade, particularly as policymakers and financial markets seek to address the growing funding needs associated with climate change mitigation and adaptation. The literature on green bonds broadly spans three interconnected themes: existence of a greenium, structural and institutional constraints for green bond in emerging market economies (EMEs) and the role of policy frameworks in shaping market development.

A substantial body of literature examines the pricing of green bonds and the existence of a yield differential relative to conventional bonds. Early empirical evidence suggests that green bonds may benefit from a pricing advantage, commonly referred to as the “greenium.” (Zerbib, 2019) finds that green bonds trade at slightly lower yields compared to conventional counterparts, indicating investor preference for environmentally sustainable assets. Similarly, (Malcolm Baker, 2018) document that green municipal bonds in the United States are issued at yields approximately 6 basis points lower than comparable traditional bonds. Expanding on this, (Schiereck, 2018) report yield differences in the range of 5-7 basis points, while European Central Bank studies find greenium estimates of up to 6-9 basis points in euro-area markets.

(Agliardi, 2019) demonstrate that the greenium is influenced by the relative cost of environmental externalities, showing that higher penalties for non-green investment increase the yield differential between green and conventional bonds. Their work also highlights the role of asset risk, suggesting that higher volatility in underlying projects may amplify the greenium. Complementing this perspective, (Zulaica, 2022) identify the presence of a “carbon premium” in the U.S. corporate bond market, reflecting the increasing incorporation of climate-related risks into asset pricing. Taken together, these studies suggest that investor preferences are not static but can be influenced by policy design and that appropriately calibrated regulatory and fiscal measures can help channel investments toward green bonds by enhancing their relative attractiveness within the broader fixed-income market.

(Initiative, 2019) highlights that while the green bond market has expanded rapidly, issuance remains concentrated in developed economies, with emerging markets accounting for a smaller share. (Packer, 2017) emphasise the importance of certification and standardisation in strengthening market credibility, noting variation in definitions of “green projects.” On



similar lines, (OECD, 2017), underscores that the effectiveness of green bond markets depends on supportive policy frameworks, standardisation, and the availability of bankable green projects.

Overall, the literature highlights that while green bond markets have expanded globally, their development in EMEs remains uneven and constrained by structural and demand-side factors. The evidence on greenium is less consistent in emerging markets, where pricing advantages are often limited or absent.

This study contributes to the growing literature on green bonds by providing an India-specific perspective, examining the divergence in the performance of sovereign and non-sovereign (corporate and municipal) green bonds within an emerging market context.

3. Evolution of the Green Bond Market in India

3.1. Green Bonds Issued by Corporates

The corporate sector was the first mover in India's green bond market, following the first global corporate green bond issuance in 2013 closely with India's first green infrastructure bond issuance by Yes Bank in February 2015 - one of the earliest such corporate-level issuances among emerging markets. The issuance witnessed strong investor interest from insurance companies, pension and provident funds, foreign portfolio investors (FPIs), mutual funds and participants under the National Pension System. This was followed by EXIM Bank's issuance of India's first USD-denominated green bond in March 2015. The initial impetus came from financial intermediaries, particularly banks, which raised funds for on-lending to renewable energy and other green projects. Subsequently, the market saw diversification across issuers and instruments. CLP Wind Farms issued the first corporate green bond in the power sector in September 2015. Axis Bank issued India's first internationally listed certified green bond in June 2016, while NTPC became the first Indian corporate to issue green masala bonds in August 2016. Power Finance Corporation issued Euro-denominated green bonds in September 2021, reflecting increasing sophistication and global integration of Indian green bond issuances.

The strong demand for the early issuances encouraged the accelerated setup of a regulatory framework. The Securities and Exchange Board of India (SEBI) released a concept paper in December 2015 and subsequently formalised guidelines for green debt securities in May 2017. These guidelines introduced disclosure requirements regarding use of proceeds and eligible project categories, thereby enhancing transparency and credibility in the market. SEBI has continued to refine this framework, including through its 2022 consultation paper aimed at aligning domestic regulations with updated international standards such as the ICMA Green Bond Principles.



The Reserve Bank of India (RBI) has supported green financing by the private sector through supportive policy measures, including the inclusion of renewable energy under priority sector lending in 2015 and subsequent revisions to incorporate environmentally sustainable lending practices. Institutional developments, such as RBI's participation in global platforms like the Network for Greening the Financial System (NGFS) and the establishment of a Sustainable Finance Group, have further strengthened the policy ecosystem. Table 1 indicates the significant jump in the size of corporate green bond issues during FY26 and the return of financial institutions to the primary segment.

Table 1 – Green Bonds Issued by Indian Corporates

Issuer	ISIN	Issue Date	Maturity Date	Amount	Coupon (%)	Use of Proceeds
Indian Renewable Energy Development Agency (IREDA)	INE202E07229	21-Jan-16	21-Jan-31	₹1,000+ crore (tax-free tranche)	7.74	Renewable energy financing
Yes Bank Ltd		29-Dec-16	~2021–2026 (various tranches)	₹330 crore (~USD 50 mn)	~5–6 (approx)	Renewable energy lending
L&T Infrastructure Finance Co Ltd	INE691I07DZ9	29-Jun-17	18-Nov-24	667	7.59	Green use (renewables/clean)
Tata Cleantech Capital Ltd	INE857Q07216	18-Dec-18	18-Dec-23	180	8.74	Renewable energy financing
Indian Renewable Energy Dev Agency Ltd	INE202E07260	03-Jan-19	03-Jan-29	275	8.51	Renewable energy projects
Indian Renewable Energy Dev Agency Ltd	INE202E07278	17-Jan-19	17-Jan-29	590	8.47	Renewable energy
Yarrow Infrastructure Pvt Ltd	INE001W07011	01-Jul-21	01-Jul-24	581	6.49	Solar + clean assets
Priapus Infrastructure Ltd	INE964M07011	01-Jul-21	01-Jul-24	16	6.49	Clean energy
Rattanindia Solar 2 Pvt Ltd	INE935V07012	01-Jul-21	01-Jul-24	227	6.49	Solar projects
Malwa Solar Power Gen Pvt Ltd	INE999X07014	01-Jul-21	01-Jul-24	197	6.49	Solar projects
Citra Real Estate Ltd	INE969M07010	01-Jul-21	01-Jul-24	19	6.49	Green buildings
Sepset Constructions Ltd	INE961M07017	01-Jul-21	01-Jul-24	197	6.49	Green construction
Avaada Solarise Energy Pvt Ltd	INE07H107012	02-Mar-22	28-Feb-25	499	6.75	Solar energy
Clean Sustainable Energy Pvt Ltd	INE00JT07017	02-Mar-22	28-Feb-25	334	6.75	Energy transition assets
Fermi Solarfarms Pvt Ltd	INE404X07015	02-Mar-22	28-Feb-25	337	6.75	Solar projects
Avaada Satara MH Pvt Ltd	INE0CSU07013	02-Mar-22	28-Feb-25	270	6.75	Solar energy
Vikas Telecom Pvt Ltd	INE466P07010	30-Aug-22	29-Aug-25	495	7.65	Tech + clean use
Mindspace Business Parks REIT	INE0CCU07074	15-Mar-23	13-Apr-26	550	8.02	Green buildings/energy
Samunnati Financial Intermediation & Services Private Limited	INE551U07340	05-Dec-24	05-Jan-26	50	11.25	To develop climate-smart agriculture solutions
Dme Development Limited	INE0J7Q07256	11-Dec-24	11-Dec-34	775	7.23	To construct avenue plantation, median plantation, construction of animal underpasses and natural stormwater drainage
KPI Green Energy Ltd	INE542W07014	11-Sep-25	11-Sep-30	670	8.50	Renewable energy
Muthoot Capital Services Ltd	INE296G07317	17-Oct-25	17-Oct-31	150	8.40	Green debt for clean use
Bank of Baroda	INE028A08380	05-Mar-26	05-Mar-33	10000	7.10	Financing renewable energy projects

Source: Compiled by Authors from SEBI

Apart from INR denominated green bond issues, Indian corporates have also enthusiastically embraced masala green bonds which are basically green bonds issued by Indian issuers but denominated in foreign currencies to take advantage of the low interest rates overseas. Green bonds account for a significant portion of debt securities listed in GIFT City supported by the structured and internationally aligned regulatory environment as well as the access to global investors looking for ESG-compliant assets. The International Financial Services Centres Authority (IFSCA) has also introduced a framework for ESG-linked transition bonds to support industries in reducing carbon emissions. This has also attracted foreign entities such as Sri



Lanka's DFCC Bank PLC which became the first foreign corporate to list green bonds on the NSE International Exchange (NSE IX) in GIFT City, India, raising LKR 2.5 billion on June 9, 2025.

Table 2 – USD Denominated Green Bonds Issued by Indian Corporates

Issuer	ISIN	Issue Date	Maturity	Amount	Coupon
Adani Green Energy Ltd	US00653XAA54	2021	2024	USD 750 mn	4.38%
Adani Green Energy Ltd	XS2383328932	2021	2024	USD 750 mn	4.38%
Adani Green Energy (UP) Ltd	US00654AAA43	2019	2024	USD 500 mn	6.25%
Adani Green Energy (UP) Ltd	XS1854172043	2019	2024	USD 500 mn	6.25%
Adani Green Energy (UP) Ltd	US00654AAC09	2022	2042	USD 409 mn	6.70%
Adani Green Energy (UP) Ltd	XS2777626685	2022	2042	USD 409 mn	6.70%
ReNew Wind Energy Delhi Pvt Ltd	USY7280PAA13	2021	2028	USD 585 mn	4.50%
ReNew Wind Energy Delhi Pvt Ltd	US75973PAA75	2021	2028	USD 585 mn	4.50%
ReNew Power (Treasury IFSC)	USY72910AA35	2021	2031	USD 600 mn	6.50%
ReNew Power (Treasury IFSC)	US759963AA95	2021	2031	USD 600 mn	6.50%
SAEL Ltd	US78637MAA62	2023	2031	USD 305 mn	7.80%
SAEL Ltd	USY7389MAA81	2023	2031	USD 305 mn	7.80%
JSW Infrastructure Ltd	US46654XAA72	2024	2029	USD 400 mn	4.95%
JSW Infrastructure Ltd	USY4470XAA10	2024	2029	USD 400 mn	4.95%
REC Ltd	US74947LAD64	2023	2028	USD 750 mn	5.63%
REC Ltd	US74947MAD48	2023	2028	USD 750 mn	5.63%
REC Ltd	XS2732247346	2024	2029	JPY 27.4 bn	1.41%
REC Ltd	XS2732247189	2024	2029	JPY 31 bn	1.76%
REC Ltd	XS2732247858	2024	2034	JPY 2.7 bn	2.20%
REC Ltd	XS1641477119	2017	2027	USD 450 mn	3.88%
Power Finance Corporation	XS2384373341	2023	2028	EUR 300 mn	1.84%
Power Finance Corporation	XS1725342288	2017	2027	USD 400 mn	3.75%
HDFC Bank Ltd	XS2762290877	2024	2027	USD 300 mn	5.20%
Axis Bank Ltd	US05464XAA37	2024	Perpetual	USD 600 mn	4.10%
Export-Import Bank of India	US30216JAG04	2023	2033	USD 1 bn	5.50%
Export-Import Bank of India	US30216KAG76	2023	2033	USD 1 bn	5.50%
Indian Railway Finance Corp	US45434L2H62	2022	2032	USD 500 mn	3.57%
Indian Railway Finance Corp	US45434M2H45	2022	2032	USD 500 mn	3.57%
Indian Railway Finance Corp	XS1733877762	2018	2027	USD 500 mn	3.84%
State Bank of India	XS2741061076	2024	2028	USD 250 mn	FRN
State Bank of India	XS1856795510	2018	2023	USD 650 mn	4.50%

Source: Compiled by Authors from India International Exchange (INX)

Corporate green bonds are largely issued through private placements and public data on secondary market activity in corporate green bonds is not readily available for further studies.

3.2. Green Bonds Issued by Local Governments

The Green Municipal Bond (GMB) segment in India, though relatively nascent, is emerging as an important channel for financing urban climate infrastructure. The issuance by Ghaziabad Nagar Nigam in March 2021 marked the entry of Urban Local Bodies (ULBs) into the municipal green bond space, with proceeds directed toward sewage treatment and industrial water reuse infrastructure. Subsequent issuances indicate a diversification in both issuers and



project categories. Table 3 shows how a growing number of municipal or urban local bodies (ULBs) have accessed the segment, primarily to fund projects in water management, renewable energy, and sustainable urban mobility.

Table 3 – Green Municipal Bond Issuances

ISIN	Issuer (ULB)	Year / Month	Coupon	Credit Rating	Maturity (in yrs)	Size (₹ crore)	Primary use of proceeds	Subscription
INE0GVF24071	Ghaziabad Nagar Nigam	Mar-21	8.1	AA	10	150	40 MLD tertiary sewage treatment plant and 95 km pipeline for industrial reuse	4 times
INE00QS24019	Indore Municipal Corporation	Feb-23	8.25	AA	3	244	60 MW captive solar PV plant for water-pumping operations	2.4 times
INE117E08029	Ahmedabad Municipal Corporation	Feb-24	7.9	AA+	5	200	Facilitate the efficient execution of several green initiatives, including sewage water purification for industrial use and implementation of zero-liquid discharge systems under AMRUT 2.0	13.6 times
INE0KDG08023	Vadodara Municipal Corporation	Mar-24	7.15	AA+	5	100	Two 121 MLD STPs and auxiliary pumping/drainage systems	14.6 times
INE1QL524016	Prayagraj Nagar Nigam	May-25	8.07	AA	4–7	200	Sewerage & river pollution abatement infrastructure	4.4 times
INE0P1K24036	Pimpri-Chinchwad Municipal Corporation	Jun-25	7.85	AA+	5	200	Harit Setu non-motorised transport and urban mobility corridor	5.13 times
Bond has multiple STRPP	Nashik Municipal Corporation	Dec-25	7.8	AA+	5	200	"Clean Godavari Bonds 2030 Series-I" to fund key projects, including a sewerage pipeline network, Ram Kal Path Phase-II, the Ram Jhula pedestrian bridge, and vending zones near Kalaram and Kapaleshwar temples in the city	3.95 times
INE1SKA24078	Greater Chennai Corporation	Jan-26	7.95	AA+	4–9 (multi-tenor)	206	Stormwater drains, flood mitigation, climate-resilient urban infrastructure	5.02 times

Source: Compiled by Authors from SEBI

A notable feature of GMB issuances in India is the relatively strong credit quality of issuers, with most bonds rated in the AA to AA+ category. Coupon rates have generally ranged between 7.1 per cent and 8.25 per cent, reflecting competitive pricing relative to similarly rated municipal or corporate debt instruments. The identifiable and ring-fenced nature of underlying projects has enhanced investor confidence, contributing to strong subscription levels observed in several issuances.

Despite these positive developments, the scale of the GMB market remains limited. Issuance sizes have typically ranged between ₹100 crore and ₹244 crore, indicating that the segment is still in an early stage of development. Structural constraints such as creditworthiness across ULBs, limited financial autonomy and dependence on state and central transfers continue to restrict broader participation. Further, public data on secondary market activity is also not readily available. However, the increasing number of issuances in this segment reflects a gradual strengthening of local government participation in climate financing, supported by improving credit profiles and project-level transparency.



3.3. Sovereign Green Bonds

The Union Budget presented on February 1, 2022 marked a turning point in India's sustainable finance journey, with the announcement of Sovereign Green Bonds (SGRBs) issuances. India's Sovereign Green Bond Framework was approved in November 2022. The framework, administered by the Department of Economic Affairs, laid out clear governance mechanisms and identified nine categories of eligible green expenditures ranging from renewable energy and clean transport to water management, green buildings, and biodiversity conservation. RBI subsequently announced an issuance calendar of ₹16,000 crore for FY23, signalling India's formal entry into the sovereign green bond market as a credible emerging market issuer with strong climate intent. India's first SGRB issuance took place on January 27, 2023 with the Government raising ₹8,000 crore through 5-year and 10-year securities. These were priced at a reasonable green premium of around 6 basis points below comparable conventional bonds, reflecting initial investor appetite.

Despite stable market conditions, between FY24 and FY26, the SGRB program has transitioned from a highly anticipated debut to a struggling segment of the G-Sec market with significant pricing friction during auctions and reduced issuance targets. While the initial ₹20,000 crore issuance in FY24 was met with healthy demand across various maturities, subsequent years saw a disconnect between the government's "greenium" expectations and investors' demands for higher yields to compensate for illiquidity and a lack of direct incentives. This tension led to substantial bid rejections and devolvments during primary auctions in FY25, prompting the government to scale back its FY26 target to ₹20,000 crore, of which only ₹15,000 crore was successfully raised. Table 4 shows the trajectory of primary SGRB auctions since inception.

Table 4: Sovereign Green Bond Issuances

FY/SGRB	ISIN	Count	Notified Amount (₹ crore)	Issuance (₹ crore)	Bid-to-Cover Ratio	Devolvement on PDs (₹ crore)	Auction Failure (%)	Cut-off Price (₹)	Cut-off Yield (%)	Share in Gross Annual G-Sec Issuances (%)
2022-23		4	16000	16000	3.49	-	-	99.85	7.2292	1.13%
7.10% SGRB 2028	IN0020220136	2	8000	8000	3.04	-	-	99.73	7.1652	0.56%
7.29% SGRB 2033	IN0020220144	2	8000	8000	3.93	-	-	99.98	7.2933	0.56%
2023-24		4	20000	20000	2.40	-	-	100.71	7.2497	1.30%
7.24% SGRB 2033	IN0020230150	1	5000	5000	2.01	-	-	100.00	7.2400	0.32%
7.25% SGRB 2028	IN0020230143	1	5000	5000	2.49	-	-	100.00	7.2500	0.32%
7.37% SGRB 2054	IN0020230176	2	10000	10000	2.55	-	-	101.42	7.2544	0.65%
2024-25		6	32000	21697	2.06	7443	55%	99.79	6.8935	1.55%
6.79% SGRB 2034	IN0020240159	2	10000	10000	1.74	7443	74%	100.34	6.7421	0.71%
6.90% SGRB 2034	IN0020240100	1	6000	1697	2.05	-	72%	100.00	6.9000	0.12%
6.98% SGRB 2054	IN0020240175	2	10000	10000	2.37	-	-	99.21	7.0440	0.71%
New SGRB 2034	-	1	6000	-	2.11	-	100%	-	-	-
2025-26		4	20000	15000	2.32	-	25%	98.66	7.0912	1.05%
6.98% SGRB 2054	IN0020240175	4	20000	15000	2.32	-	25%	98.66	7.0912	1.05%
Total		18	88000	72697	2.46	7443	26%	99.82	7.1062	

Source: Compiled by Authors from RBI & CCIL



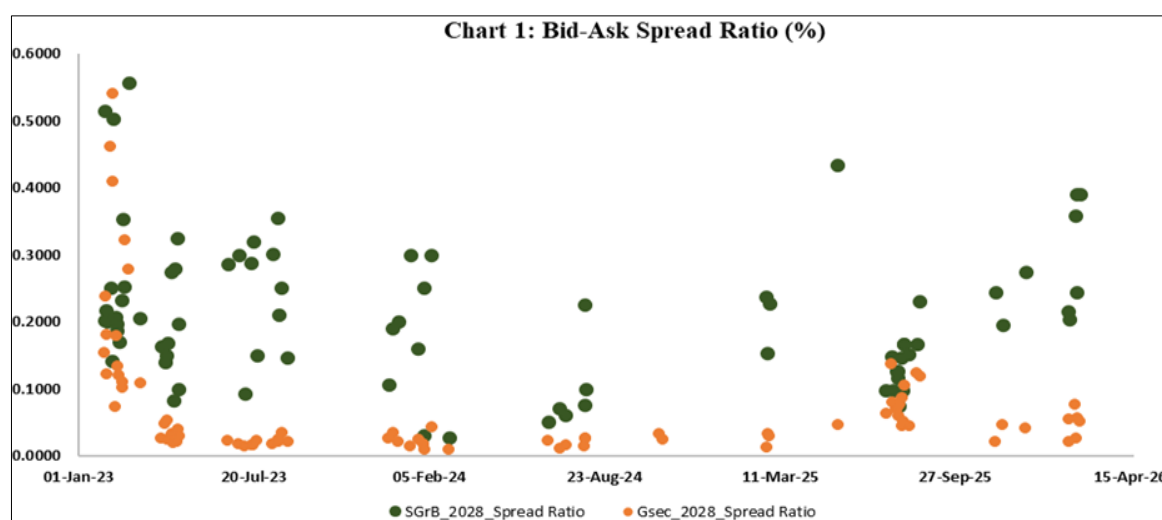
While the demand measured in terms of the Bid-to-Cover Ratio has remained strong during auctions, the secondary market has remained subdued. Table 5 shows the miniscule share of SGrBs in the total trading in the G-Sec market. Trading volumes in SGrBs are significantly lower than those of conventional G-Secs, indicating limited liquidity and a narrow investor base.

Table 5: Secondary Market Trading of Sovereign Green Bonds

FY	SGrB Trade Count	SGrB Trade Face Value (₹ crore)	Total Outright Trading Face Value (₹ crore)
2022-23	89	2571	10090700
2023-24	178	7109	13463848
2024-25	539	14700	16056018
2025-26	530	24182	17075807
Total	1336	48562	

Source: CCIL

Trading in SGrBs is shallow, with limited liquidity and negligible yield differentiation vis-à-vis conventional G-Secs. Despite policy measures such as opening up participation to NRIs and foreign portfolio investors (FPIs), market activity has not materially improved. The absence of a meaningful greenium reflects insufficient market demand. The lack of differentiation vis-à-vis conventional G-Secs is further evident from liquidity indicators such as the bid-ask spread (BAS). A comparison between the SGrB maturing in 2028 and the corresponding liquid conventional G-Sec of similar maturity highlights this disparity. First, the SGrB is not traded consistently, making it difficult to compute a continuous daily bid-ask spread ratio³ series. Second, on the limited days when trades do occur, a comparison of bid-ask spreads indicates that SGrBs exhibit wider spreads than their conventional counterparts. When the bid-ask spread ratios of the two securities are plotted, the SGrB consistently reflects higher spreads, signalling lower liquidity. This is illustrated in Chart 1 below and reinforces the conclusion that the SGrB market lacks the depth and efficiency observed in the conventional G-sec market.



³ Bid-ask spread ratio is a normalized measure of market liquidity, computed as the difference between the ask price and bid price divided by the mid-price $(ask+bid)/2$. It reflects the proportional transaction cost of trading a security, with lower values indicating higher liquidity and more efficient price discovery.



The lack of a strong base of ESG-focused investors, social impact funds and mandate-driven capital limits demand for green assets. Consequently, SGrBs remain concentrated in long-term institutional portfolios, constraining liquidity, weakening price discovery, and limiting the overall development of the market.

Another key structural constraint towards liquidity lies in the design of the issuances. Smaller issue sizes, combined with a strong buy-and-hold tendency among institutional investors, have reduced the free float of these bonds. Consequently, a large share of SGrBs remains locked in held-to-maturity portfolios of financial institutions like banks, insurance companies, and provident funds, leaving little available for active trading. This has resulted in persistently thin secondary market activity and weak price discovery, thereby constraining the overall development of India's SGrB segment. In turn, these liquidity limitations have contributed to the gradual erosion of the greenium in the primary market, as reflected in Table 7 below.

Table 7: Sovereign Green Bond Greenium at Primary Auctions

Auction Date	SGrB	Auction Cut off Yield (%)	Comparable G-Sec	Secondary Market Yield (%)	Greenium (in bps)
25-01-23	7.10% SGrB 2028	7.1000	7.38% GS 2027	7.1572	5.72
25-01-23	7.29% SGrB 2033	7.2900	7.26% GS 2032	7.3502	6.02
09-02-23	7.10% SGrB 2028	7.2304	7.38% GS 2027	7.2648	3.44
09-02-23	7.29% SGrB 2033	7.2965	7.26% GS 2032	7.3463	4.98
10-11-23	7.25% GOI SGrB 2028	7.2500	7.06% GS 2028	7.2653	1.53
09-12-23	7.24% SGrB 2033	7.2400	7.18% GS 2033	7.2960	5.60
19-01-24	7.37% GOI SGrB 2054	7.3700	7.30% GS 2053	7.3965	2.65
02-02-24	7.37% GOI SGrB 2054	7.1387	7.30% GS 2053	7.1443	0.56
02-08-24	6.90% SGrB 2034	6.9000	7.10% GS 2034	6.9034	0.34
29-11-24	6.79% SGrB 2034	6.7900	7.10% GS 2034	6.7976	0.76
13-12-24	6.98% SGrB 2054	6.9800	7.09% GS 2054	6.9846	0.46
31-01-25	6.79% SGrB 2034	6.6941	6.79% GS 2034	6.6902	-0.39
21-02-25	6.98% SGrB 2054	7.1079	7.09% GS 2054	7.0794	-2.85
17-04-25	6.98% GOI SGrB 2054	6.8765	7.09% GS 2054	6.8423	-3.42
31-10-25	6.98% GOI SGrB 2054	7.1876	7.09% GS 2054	7.1851	-0.25
28-11-25	6.98% GOI SGrB 2054	7.2094	7.09% GS 2054	7.2878	7.84

Source: CCIL

As the relative attractiveness of SGrBs is diminishing in the absence of meaningful liquidity and a sustained pricing differential, issuer preference for these bonds is also weakening. Thus, we find that SGrBs are increasingly being priced in line with comparable conventional G-Secs, with a convergence in yields and a dilution of the green premium.

4. Way Ahead – Recommendations for Market Development

Demographic projections indicate exponential growth in India's urban population, with numbers crossing 600 million people, or 40 percent of the country's population by 2036, and urban areas contributing almost 70 percent to GDP. Urban transition is closely aligned with India's commitments under the Sustainable Development Goals (SDGs), particularly SDG 11



(Sustainable Cities and Communities). As Indian cities confront escalating climate risks, rising deficits, and shrinking fiscal space, conventional financing channels are no longer adequate.

Green bonds can be the gamechanger towards sustainably financing India's aspiration to become a *Viksit Bharat* by 2047. Based on our analysis of the primary and secondary activity across various sections of the Indian green bond market, our recommendations for market development can be summarized as:

4.1. Sovereign Green Bonds

Introducing financial incentives - such as tax breaks on interest income, could boost participation from retail investors via the RBI's Retail Direct platform, while awarding "Green Credits" could align corporate investments with national sustainability goals. Furthermore, long-term institutional and ESG-focused investors as well as banks can be attracted through targeted tax incentives and regulatory exemptions.

4.2. Green Municipal Bonds

Developing a GMB market in India requires strengthening the financial and institutional capacity of ULBs. Key structural reforms include enhancing transparency through audited, accrual-based accounting and boosting Own-Source Revenue (OSR) via GIS-mapped property taxes and rationalized user charges to improve debt servicing credibility. Establishing dedicated municipal debt management units can help transform ULBs into self-sustaining, market-ready entities. Eligibility of projects under corporate CSR schemes can also help ULBs easily raise funds for highly visible local projects. By opting for GMBs, large municipalities like the Brihanmumbai Municipal Corporation can also avail of a direct monetary incentive of ₹100 crore for any single municipal bond issuance exceeding ₹1,000 crore as announced in the Union Budget 2026-27.



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